

## The Integration of Environmental Education and Communicative English Based on Multiple Intelligence Theory for Students in Extended Schools

Chalothorn Sangsongfa<sup>a</sup>, and Wee Rawang<sup>a</sup>

<sup>a</sup>Mahidol University, , Salaya, Thailand

### ABSTRACT

Research and Development (R&D) was used with 364 students, 44 teachers and 3 school directors before designing innovation, and evaluating the model efficiency with 30 voluntary students by Action Research (AR). The research used questionnaire, interview form and innovation efficiency evaluation form, and statistically analyzed by percentage, means, standard deviation and t-test. The research findings revealed that most informants were female (59.50%), 14.15 years old in average, and studied in secondary school. Most communities experienced chemical residues (41.50%), particularly in soil (48.60%), air (35.20%) and water (32.70%) respectively. Cultural problems were caused by technological progress (40.10%). The learning on environmental education ( $\bar{x} = 3.95$ , S.D. = 0.88) and communicative English were at high level ( $\bar{x} = 3.67$ , S.D. = 0.92). In addition, the researchers also found that the integrated model appeared high level of performance ( $E_1/E_2 = 81.51/82.11$ ), levels of both content ( $\bar{x} = 4.60$ , S.D. = 0.55) and construct validity ( $\bar{x} = 3.97$ , S.D. = 0.55) with statistically significant difference at 0.05.

### KEYWORDS

Integration, environmental, environmental education, communicative English, multiple intelligence theory

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### Introduction

Presently, our society is encountering the environmental problems more seriously. The cause is from people using luxuriously natural resources for consumption which leads to be appearing the environmental problems; hence, the appropriate way to solve the problems is that educating, especially in terms of environmental education for mutual living with happiness. This is the way to prevent and solve sustainably the environmental problems in the long run. (Verravatananond, 1997; Sananworakiat, 2010)

**CORRESPONDENCE** Chalothorn Sangsongfa ✉ [chalothorn.sangsongfa@gmail.com](mailto:chalothorn.sangsongfa@gmail.com)

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Environmental Education is a process which gives knowledge systematically, uses educational technology, and transfer environmental knowledge to individuals of every level in order to make behavioral change through the use of natural resources and environments reasonably and wisely, as well as having more environmental morality. (Chunkao, 199; Wungaeo, n.d.)

Currently, the ASEAN countries are emphasizing the environmental education by integrating it in basic education. This is in accordance with the National Education Act in B.E. 2542 (1999) which focuses on learning process through consciousness, perception, management, maintenance, and sustainable application of natural resources and environments. (Ministry of Education, 2008) Due to people presently around the world are active on learning about environmental education, it is necessary for Thai students to gain knowledge of the English language for communication to make understanding and construct good relationship among various countries. (Office of the Education Council, 2004) This can be said that English is the language used mostly both in and out of the classroom. Thus, organization of the instructional process has to be concordant with nature and lifelong learning. Moreover, the learning process should be appropriate to the age and class level to let the learners have their own learning styles. In addition, it should be considered the potential difference of the students. (Hue & Kennedy, 2014) This is in accordance with the Multiple Intelligence Theory of Gardner who said that everybody could develop his intellect if the individual learning process was organized appropriately. (Armstrong, 1999) This is also in accordance with the Intellectual Development Theory of Jean Piaget who believed that everybody has been ready to interact and adjust with environments by assimilation and accommodation (Khowtrakul, 2005), especially between 11-15 years of age should be enhanced and developed to have good ideas and behave appropriately towards their society of the country. (Inseepong and Pattana-amorn, 1998)

According to such necessity, the researcher is interested to design the integrated model of environmental education and communicative English based on Multiple Intelligence Theory in extended schools. This is concordant with the problems and needs of the teachers and schools which will lead to the construction of inspiration, consciousness, and participation of environmental management in the community, as well as being able to be the instruments of communication, searching, and opinions exchange about environmental situations in the universal level sustainably both present and future time.

### ***Research Objective***

The purpose of this research was to design an integrated model of environmental education and communicative English based on Multiple Intelligence Theory for students in extended schools with 3 specific objectives as the following:

- i. To study the environmental situations and opinions on environment in the community, learning on environmental education, and communicative English.
- ii. To synthesize the integrated model of environmental education and communicative English for students in extended schools.
- iii. To evaluate the integrated model efficiency

## Reviewed Literature

### *Importance of Technology Integration into Teaching*

**1. Integration** refers to the connection of several subjects altogether in order to open the opportunity of cooperation both from teachers and students to search or study what they are interested in for the learning design. Moreover, it is important to organize the appropriate time and respond the special Interest of each student as well as organizing the environment to be appropriate for solving problems in various situations appropriately (Blishen, 1969; Hopkins, 1973; White, 1981) by organizing the learning as the interdisciplinary integration within the learning subject matters group in terms of Multi-disciplinary called Infusion Model. (Phanit, 2003)

**2. Environmental Education** refers to the integration of connection on every subject; therefore, a scholar defined the environmental education as a process focusing on developing the public to have knowledge and understanding in environmental principles and problems both physical and social aspects to let the human beings have values, attitudes, and consciousness about the occurred effects and know how to solve them. (Bogan, 1973; Bowman, 1974; Greenal, 1981) This is in accordance with the purposes of environmental education objectives, which included 1) awareness, 2) knowledge, 3) attitude, 4) skill, 5) evaluation ability, and 6) participation. (UNESCO, 1976)

**3. Communicative English** refers to the universal language mostly used as the medium of communication; hence, learning English is considered as the base for applying in livelihood and career. (Muangkoe, et.al., n.d.) It is necessary for communicative English to have accuracy and fluency of language use. This is in accordance with the research of Rawang (2008) who found that the accuracy on communicative English consisted of 3 parts including the communicative English sentence, communicative English statement, and communicative English message conductors.

**4. Multiple Intelligence Theory** refers to the intellectual competency of human beings in various terms as well as the ability of solving problems in each aspect differently with different environments. The intelligence consists of 8 aspects including: 1) verbal/linguistic intelligence, 2) logical mathematical intelligence, 3) visual/spatial intelligence, 4) bodily/Kinesthetic Intelligence 5) Musical/Rhythmic Intelligence, 6) Interpersonal Intelligence, 7) Intrapersonal Intelligence, and 8) Naturalistic Intelligence. (Gardner, 1983; Armstrong, 1999)

### **Methodology**

The research design of this study was considered to be mixed methods consisted of quantitative and qualitative methodologies.

### **Population and sampling**

The sample for this research could be divided into 2 groups as follows:

1. The samples giving information about environmental situations and opinions in the community before designing the model in terms of quantitative research was 364 students in junior secondary education in the extended schools, calculated by Yamane's formula (1967), and 22 academic teachers and 22 English teachers teaching the secondary education level. The selection was done by

purposive sampling to answer the questionnaire. For the qualitative research, the structured interview was done with 3 school directors selected by purposive sampling as in the table 1

**Table 1.** Number of sample groups for studying the environmental situations and opinions

District	Number of Schools	Number of Students	Academic Teachers	English Teachers	Director School
Nakhon Chai Si	4	55	4	4	1
Bang Len	9	96	9	9	1
Sam Phran	6	183	6	6	-
Puttamonton	3	30	3	3	1
Total	22	364	22	22	3

2. The samples giving information for evaluating the efficiency of the integrated model was consisted of 30 students in junior secondary education level, Nakhon Pathom Primary Educational Service Area 2, form 3 schools including Wat Kokprachedee School, Watphaihuchang School, and Banklongyong School. They were selected by voluntary students.

### **Data collection**

There were 3 stages of data collection for this research:

Stage 1: Studying the situations and opinions about environmental problems, environmental education learning, and communicative English learning. The data collection was implemented by questionnaire and structured interview. The research instrument quality was investigated by 3 specialists and analyzed by IOC (Index of Item Objective Congruence: IOC).

Stage 2: Synthesizing the integrated model. The SWOT Analysis was used to find some main factors for designing the innovation which was later inspected its quality or validity consisting of both content and construct, by the specialists with IOC analysis.

Stage 3: Evaluating the integrate model efficiency. It was implemented by 30 voluntary students in junior secondary education from 3 extended schools in Nakhon Pathom Province.

### **Data Analysis**

This research design was mixed methods which were consisted of quantitative research by using basic statistics including percentage (%), mean ( $\bar{x}$ ), standard deviation (S.D.), weight mean score (WMC), t-test, and qualitative method, also the content analysis and descriptive writing were used.

### **Research Findings**

The research findings revealed that most of the students were female (59.50%), 14.15 years old (73.40%), most of them perceived that environmental education was the knowledge management process about environments in the community (38.80%), whereas the level of English learning was found at the moderate level (41.20%), and most of them held agricultural career (67.30%); particularly, growing rice (40.20%).

While the environmental situations in the community were found most of them encountered the problem of chemicals residues in soil (43%), water resources (32.70%), and agricultural chemical mixed in the air (48.90%), the community left garbages everywhere (49.50%), technological advance was the cause of problems on community cultures (40.10%) as in the Figure 1.

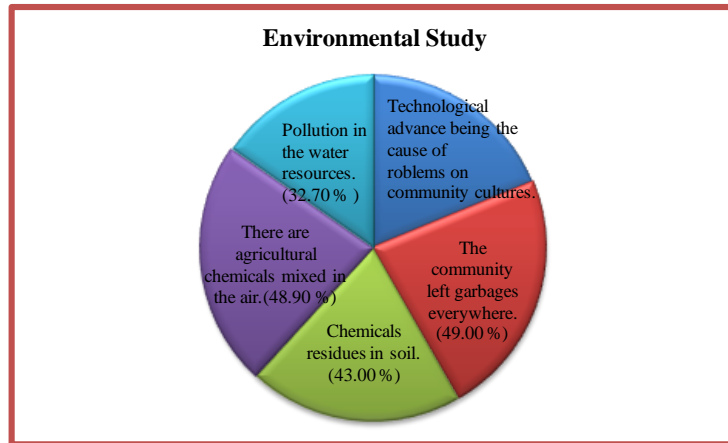


Figure 1. Environmental situations in the community

According to the learning on environmental education, it was found that the students learned the environmental education at high level ( $\bar{x} = 3.95$ , S.D. = 0.88). For each aspect, it was found that in terms of awareness, it was also at high level ( $\bar{x} = 3.79$ , S.D. = 0.90); knowledge was at high level ( $\bar{x} = 4.00$ , S.D. = 0.89); attitude was at good level ( $\bar{x} = 4.09$ , S.D. = 0.90); skill was high level ( $\bar{x} = 3.96$ , S.D. = 0.78); participation was high level ( $\bar{x} = 3.90$ , S.D. = 0.88); and ability to evaluation was high level ( $\bar{x} = 3.99$ , S.D. = 0.94) as shown in the Figure 2.

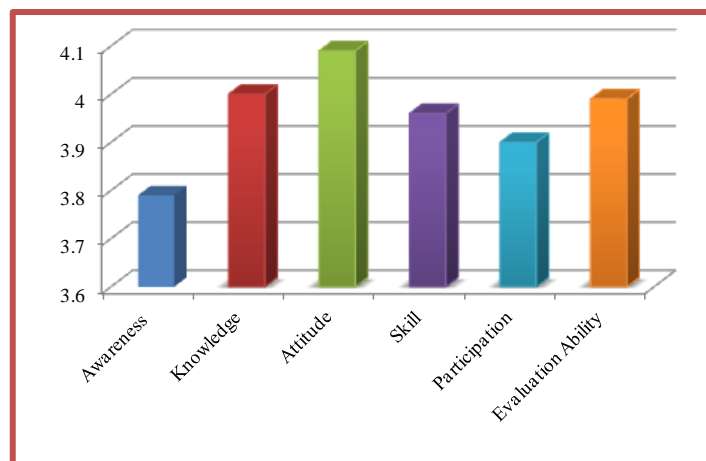


Figure 2. Levels of environmental education learning

For communicative English learning, it was found at high level ( $\bar{x} = 3.67$ , S.D. = 0.92). If it was categorized in each aspect, it could be said that the Cognitive

Domain was at high level ( $\bar{x}$  = 3.51, S.D. = 0.92), Affective Domain was at high level ( $\bar{x}$  = 3.77, S.D. = 0.91), and Psychomotor was also at high level ( $\bar{x}$  = 3.74, S.D. = 0.93) as shown in the Figure 3.

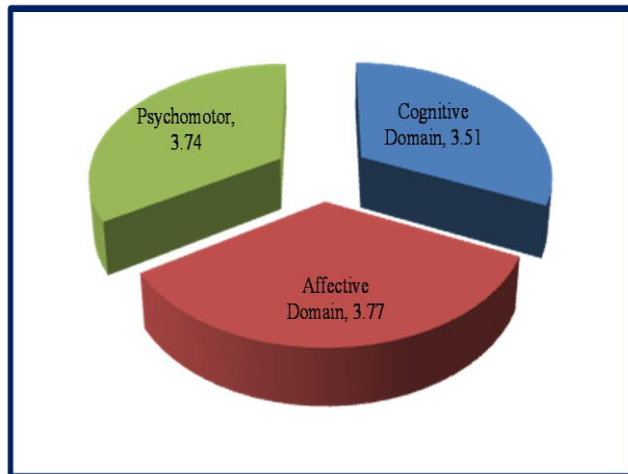


Figure 3. Skills on communicative English

After designing the integrated model of environmental education and communicative English based on the multiple intelligence theory, the researcher collected the data from 30 voluntary students consisting of Wat Kokprachedee School in Nakhon Chai Si District, Wat phaihuchang School in Bang Len District, and Banklongyong School in Puttamonton District. The purpose was to evaluate the efficiency of innovative model. For the effectiveness evaluation, the researcher conducted the action research and found that most of the students were female (60%) more than male (40%), age 14 years old (83.30%), secondly was 15 years old (16.70%), 14.17 years old, and all of them were holding Buddhism religion (100%).

The integrated model of environmental education and communicative English based on Multiple Intelligence Theory for students in extended schools was considered to be the innovation of environmental education which aimed to develop the students in the extended schools to gain knowledge, perception awareness, and able to perform the environmental problems management in their own communities, as well as being able to represent confidently, accurately and effectively in English the environmental problems and resolutions according to their different competencies as in Figure 4.

English Based on Multiple Intelligence Theory for Students in Extended Schools

According to figure 4, the research findings presented that the integrated model of environmental education and communicative English based on the multiple intelligence theory for the students in extended schools was consisted of 3 parts: environmental study; environmental education performance; and communicative English learning as the details below:

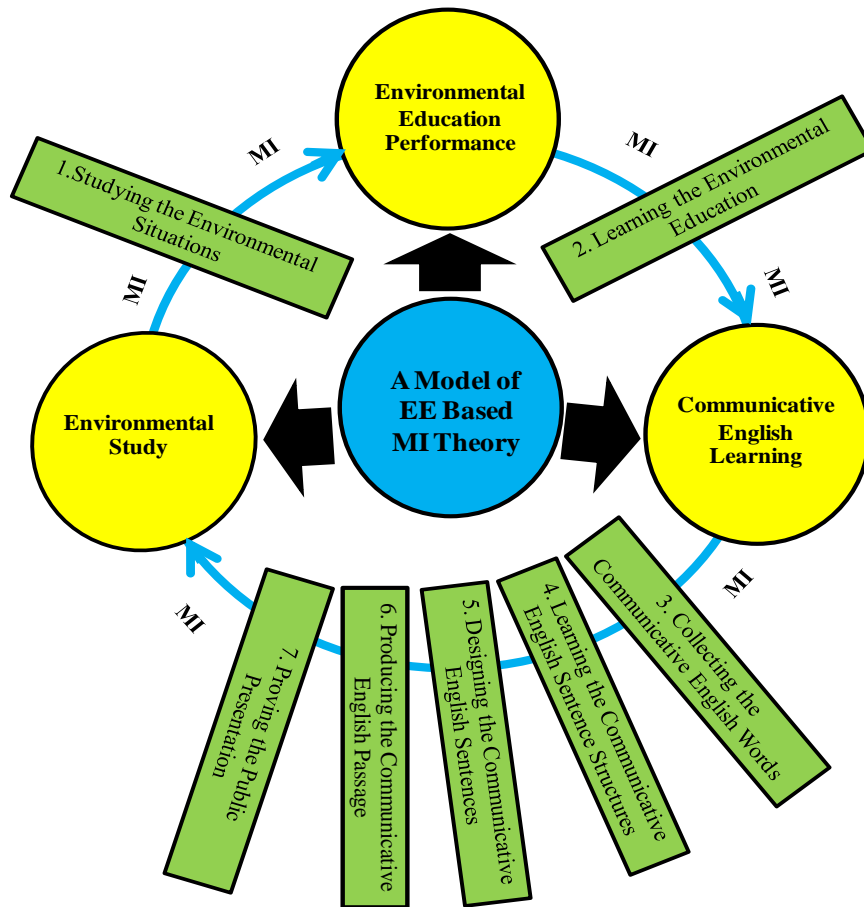


Figure 4. The Integrated Model of Environmental Education and Communicative

**1. Environmental Study:** This was the first part of innovation to make the students know basically the exiting situations of environment in the community, and learning about the environment before performing the environmental education activities. There were 4 sub-steps. (1) Studying the community environment which was found that the communities mostly confronted to the chemical residue in soil, water sources, and air from chemical agriculture, together with the problems about solid waste from throwing garbage at the wrong places, and cultural problems in their ways of life from the progress of technology in global society. (2) Leaning in environmental education which was found to be located in high level. (3) Learning in communicative English which was also found in high level. And (4) Integrating the environmental education and the communicative English which was found the teachers mostly performed their teachings based on curriculum, and most students lacking of strong attention and interesting, and the learning evaluation was always performed by testing.

**2. Environmental Education Performance:** This was the second part of the innovation to educate the students achieving the objectives of environmental

education including awareness attitude, knowledge, skill, participation, and ability to evaluation environment in the community

**3. Communicative English Learning Education Performance:** This was the third part of the integrated model for students to learn how to use the English language presenting some environmental issues in the community to the publicity. They had to start from collecting the communicative English words related environment, learning the communicative English sentence structure, learning how to make accurately the communicative English passage, and presenting those passages to the publicity etc.

After the three main parts of the integrated model: environmental study, environmental education performance, and communicative English learning had been holistically combined on the concept of multiple intelligence theory, it was found that the innovation covered 7 steps as the followings:

The main objective of the integrated model of environmental education and communicative English based on multiple intelligence theory for students in extended schools is to develop the students in junior secondary education appearing empirically their actualization and participation on environmental conservation and development in the community, and enable to use accurately and effectively the English language presenting those environmental issues to the publicity. Thus, the integrated model is consisted of 3 main parts with 7 steps of performance on 8 aspects of multiple intelligence. The first part of main element is **“Environmental Study”** which is consisted of step; that is step (1) studying the environmental situations to respond the multiple intelligence on intrapersonal and naturalistic intelligences. The second part of main element is **“Environmental Education Performance”** which is also consisted of one step; that is step (2) learning the environmental education to respond the multiple intelligence on logical and mathematical, and interpersonal intelligences. And the third part of main element is **“Communicative English Learning”** which is consisted of five steps; that is step (3) collecting the communicative English words to respond the multiple intelligence on verbal/linguistic intelligence. Step (4) learning the communicative English sentence structures to respond the multiple intelligence on verbal/linguistic, and visual/spatial intelligences. Step (5) designing the communicative English sentences to respond the multiple intelligence on verbal/linguistic and visual/spatial intelligences. Step (6) producing the communicative English passage to respond the multiple intelligence on verbal/linguistic, and visual/spatial intelligences. And Step (7) providing the public presentation to respond the multiple intelligence on bodily/kinesthetic, and musical/rhythmic intelligences respectively. Theory for the students both before and after learning as shown in the table 2.

According to Table 2, the research findings revealed that the score of academic achievement after learning ( $\bar{x} = 54.22$ , S.D. = 8.12) was higher than before learning the integrated innovation ( $\bar{x} = 25.28$ , S.D. = 12.33). This was to confirm that the integrated innovation presented positive efficiency in target group learning.

The academic achievement after learning with the integrated model of environmental education and communicative English based on the Multiple Intelligence Theory had the scores after learning ( $\bar{x} = 24.63$ , SD. = 2.11) higher than before learning ( $\bar{x} = 5.90$ , S.D. = 2.43) differently by statistical significance at the 0.05 level. This is in accordance with the hypothesis shown in the Table 3.



**Table 2.** Analysis of mean ( $\bar{x}$ ), and standard deviation (S.D.) on academic achievement before and after learning the integrated model

Activity	Score of Academic Achievement before and after Learning the Innovation			
	Before learning		After learning	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.
1. Studying the environmental situations	3.00	1.44	7.66	1.09
2. Learning the environmental education	4.36	1.95	7.83	1.17
3. Collecting the communicative English words	4.66	2.28	8.03	1.27
4. Learning the communicative English sentence structures	3.16	1.29	7.10	1.44
5. Designing the communicative English sentences	4.70	2.43	7.70	1.23
6. Producing the communicative English passage	4.07	1.61	7.87	1.04
7. Providing the public presentation	1.33	1.33	8.03	0.88
<i>Average</i>	25.28	12.33	54.22	8.12

**Table 3.** Comparison of academic achievement before and after learning the integrated innovation

Test	N	Total Scores	$\bar{x}$	S.D.	t
Before Learning	30	30	5.90	2.43	**38.89
After Learning	30	30	24.63	2.11	

\*\*  $p < 0.01$

According to the Table 3, the research findings revealed that the score of academic achievement after learning ( $\bar{x} = 24.63$ , S.D. = 2.11) was higher than before learning ( $\bar{x} = 5.90$ , S.D. = 2.43) the integrated innovation with statistically significant difference at 0.01. This was in accordance with the research hypothesis specified before performing the research.

According to the effectiveness evaluation for the model of integration on educational environment and communicative English based on the multiple intelligence theory for the students in extended schools, it was found that the model of integration on educational environment and communicative English had the effectiveness ( $E_1/E_2$ ) equal to 81.51/82.11, the content validity was at the most level ( $\bar{x} = 4.60$ , S.D. = 0.55), and according to the structures at the much level ( $\bar{x} = 3.97$ , S.D. = 0.55) as shown in Table 4.

**Table 4.** Mean of innovation efficiency, mean of academic achievement, index of efficiency, and effect size

Innovation Efficiency		Mean of Academic Achievement		Index of Efficiency	Effect Size
E1	E2	Before Learning	After Learning		
81.51	82.11	5.90	24.63	0.78	0.81

According to table 4, it presented that the integrated model appeared its effectiveness with the mean score at 81.51%/82.11%. This is in accordance with the determined criteria at 80/80. Moreover, the mean of achievement results

scores after learning was higher than before using the model of integration by statistical significance at the 0.05 level, the effectiveness index was 0.78 which was more than 0.5. This represented that the model of integration was effective, and the effect size was 0.81 which represented the much big size.

**Table 5.** Students' satisfaction towards the integrated model of environmental education and communicative English based on multiple intelligence theory

Satisfaction	N	$\bar{x}$	S.D.	Level of Satisfaction
Content	30	3.82	0.78	high
Activity	30	3.84	0.56	high
Benefit	30	3.84	0.71	high
<i>Total</i>	30	3.83	0.49	high

According to the table 5, it indicated that the satisfaction of the students towards the model of integration on environmental education and communicative English based on the Multiple Intelligence theory in conclusion as overall image was at the much level ( $\bar{x} = 3.83$ , S.D. = 0.49). The appropriateness of content was at the much level ( $\bar{x} = 3.82$ , S.D. = 0.78), appropriateness of activities was at the much level ( $\bar{x} = 3.84$ , S.D. = 0.56), appropriateness of benefits was at the much level ( $\bar{x} = 3.84$ , S.D. = 0.71).

## Conclusions and Recommendations

### Conclusions

The purpose of this research is to present the integrated model of environmental education and communicative English based on multiple intelligence theory for students in extended schools with 3 specific objectives including: (1) to analyze the current situations and opinions about environment in the community, environmental education learning, and communicative English learning for students in extended schools; (2) to synthesize the integrated model of environmental education and communicative English based on the multiple intelligence theory for students in extended schools; and (3) to evaluate the designed model efficiency. The research design is a mixed method of qualitative and quantitative researches. The data collection is performed through 364 students in junior secondary education, 44 teachers, and 3 directors from 22 schools in Nakhon Pathom Office of Primary Education Service Area 2. The research instruments are questionnaire, structured interview form and innovation efficiency evaluation form. After designing the integrated model, the model quality evaluation is performed by 3 specialists, and model efficiency evaluation is performed by 30 voluntary students from 3 schools as the research findings below:

### *Exiting situations and opinions about environment in the community, environmental education learning, and communicative English learning for students in extended schools*

In term of environmental situation, the research findings revealed that most informants are female (59.50%) 14.15 years old in average (73.40%). Their occupations are mostly agriculture (67.30%) with chemical contamination in soil (43.00%), and chemical application in agriculture is considered to the cause of soil



pollution (48.60%). In the community, source of water supply is tapped water (80.50%). The household waste water is always drained with no treatment to a canal (30.20%), and chemical application in agriculture is found to be the cause of water source pollution in the community (32.70%). In term of air pollution, it is found the chemical contamination making the air pollution (48.90%), and chemical application in agriculture is also the cause of air pollution (35.20%) in the community. In term of solid waste, it is found throwing garbage at the wrong places being the source of solid waste (49.50%), and most of them are from households (40.90%). In term of cultures, they believed that the causes of cultural pollution in the community has been from the progress of technology (40.10%).

In term of environmental education, it is found that most students appear the lowest awareness in environment ( $\bar{x} = 3.7$ , S.D.= 0.90), then participation ( $\bar{x} = 3.90$ , S.D.= 0.88), skill ( $\bar{x} = 3.96$ , S.D.= 0.78), and ability to evaluation ( $\bar{x} = 3.99$ , S.D.= 0.94) respectively.

In term of communicative English leaning, most students are found to have the lowest score in cognitive domain ( $\bar{x} = 3.5$ , S.D. = 0.92), then psychomotor ( $\bar{x} = 3.74$ , S.D.= 0.93), and affective domain ( $\bar{x} = 3.77$ , S.D.= 0.91) respectively.

### ***An Integrated model of environmental education integrated to communicative English based on multiple intelligence theory for students in extended schools***

The main objective of the integrated model of environmental education and communicative English based on multiple intelligence theory for students in extended schools is to develop the students in junior secondary education appearing empirically their actualization and participation on environmental conservation and development in the community, and enable to use accurately and effectively the English language presenting those environmental issues to the publicity. Thus, the integrated model is consisted of 3 main parts with 7 steps of performance on 8 aspects of multiple intelligence. The first part of main element is “***Environmental Study***” which is consisted of one step; that is step (1) studying the environmental situations to respond the multiple intelligence on intrapersonal and naturalistic intelligences. The second part of main element is “***Environmental Education Performance***” which is also consisted of one step; that is step (2) learning the environmental education to respond the multiple intelligence on logical and mathematical, and interpersonal intelligences. And the third part of main element is “***Communicative English Learning***” which is consisted of five steps; that is step (3) collecting the communicative English words to respond the multiple intelligence on verbal/linguistic intelligence. Step (4) learning the communicative English sentence structures to respond the multiple intelligence on verbal/linguistic, and visual/spatial intelligences. Step (5) designing the communicative English sentences to respond the multiple intelligence on verbal/linguistic and visual/spatial intelligences. Step (6) producing the communicative English passage to respond the multiple intelligence on verbal/linguistic, and visual/spatial intelligences. And step (7) providing the public presentation to respond the multiple intelligence on bodily/kinesthetic, and musical/rhythmic intelligences, respectively.

### **Efficiency evaluation of the integrated model of environmental education and communicative English based on multiple intelligence theory for students in extended schools**

The efficiency of the integrated model has presented ( $E_1/E_2$ ) 81.51/82.11 with high level in both content validity ( $\bar{x} = 4.60$ , S.D. = 0.55), and construct validity ( $\bar{x} = 3.97$ , S.D. = 0.55). The academic achievement of the voluntary students after being actually treated by the integrated model presents higher ( $\bar{x} = 24.63$ , S.D. = 2.11) than before treating ( $\bar{x} = 5.90$ , S.D. = 2.43) with statistically significant difference at 0.05. Moreover, most students have presented high level of their satisfaction to the integrated model which is found to be consistent to the hypothesis. ( $\bar{x} = 3.83$ , S.D. = 0.49).

#### **Recommendations**

- i. The integrated model of environmental education and communicative English based on multiple intelligence theory should be actually applied to students in any kinds of school because it was designed to serve the current problems and students' needs which will bring them to get more effective learning, self-studying, leaning in the actual situation, being beneficial to daily life, and planting their realized responsibility to environment before walking to the real society in future.
- ii. There should be integrated the environmental education to some other subjects such as mathematics, arts, and the Thai language etc. as in the concept of interdisciplinary.

#### **Disclosure statement**

No potential conflict of interest was reported by the authors.

#### **Notes on contributors**

**Chalothorn Sangsongfa** is Doctoral Graduate in Environmental Education Program, Department of Education, Faculty of Social Sciences and Humanities, Mahidol University, Thailand.

**Wee Rawang** is Director of Ph.D. Program in Environmental Education, Department of Education, Faculty of Social Sciences and Humanities, Mahidol University, Thailand.

#### **References**

- Armstrong, T. 1999. *Multiple Intelligence in the Classroom: Teaching Methods for Developing Intelligences*. (Aree Sanhachawee, Translator). Bangkok: Book Development Center, Department of Curriculum and Instruction Development.
- Blishen, E. (1969). *Blond's Encyclopedia of Education*. London: Blond Education.
- Bogan, walter J. (Summer, 1973). Environmental Education Redefined. *The Journal of Education*, 4 (4)3-8.
- Bowman, Marylynne Cox. (1974). *Journal of Environmental Education*. Winter: Asseeing College Student Attitude Toward Environmental Issues
- Chungkao, K. (1993). *Educational Environment*. Bangkok: Aksorn Siam Publishing.
- Gardner, H. (1983). *Frames of Mind*. New York: Basic.
- Greenal, A. (1981). *An Introduction to Environmental Education: A Sourcebook for Secondary Education*. Boston: Houghton Mifflin.co.
- Hopkins. (1973). *Integration, it Meaning and Application*. New York: Appleton Century Company Inc.



- Hue, M & Kerry Joh, K. (2014). Creating culturally responsive environments: Ethnic minority teachers' constructs of cultural diversity in Hong Kong secondary schools. *Asia Pacific Journal of Education*, 34:3, 273- 287.
- Inseepong, V and Pattana-amorn, S. (1998). *Adjustment towards the Social Change and Politics of Teenagers*. n.d.
- Kammanee, T. (2010). *Instructional Science: Knowledge Base for Effective Learning\_Process*. (12<sup>th</sup> Edition). Bangkok: Darn Sutta Press Company Limited.
- Khowtrakul, S. (2013). *Educational Psychology*. (10<sup>th</sup> Edition). Bangkok: Chulalongkorn University Printing House
- Kurusapa Printing Ladphrao. (2549). *Ways for Integration Learning Management*. (2<sup>nd</sup> Edition). n.d..
- Ministry of Education. (2008.). *The Basic Education Core Curriculum B.E. 2551 (A.D. 2008)*. Bangkok: The Agricultural Co-Operative Federation of Thailand Limited.
- Muangkoe, S, et.al., (n.d.). *The Report of Complete Research Results on Fun Education to Enhance the Academic Strength of Ideal Teachers*. Faculty of Education, Kasetsart University.
- Office of the Basic Communication Commission, Ministry of Education. (2004). *Learning...Integration*. Bangkok: Kurusapa Printing Ladphrao
- Office of the Education Council. (2004). *Report of Synthesis on the Model of Learning Process Managent of Model Teachers (According to the National Education Act B.E. 2542) The Model of Learning Process Management based on Foreign Language Subject Matters Group*. Bangkok: Sor Kor Sor.
- Onnuam, D and Kammanee, T. (2005). *Integration Learning Management*. Bangkok: Institute of Academic Development (IAD).
- Phanit, W. (2003). Integration: Concepts and Practicing Ways to Meaningful Learning Management. In Suwattana Aiamorrapan, Pimpan Dechakup, and Kamolporn Bandittayanon (Editors), *Concepts and Practice Ways for Teachers to Support the Standard of Teacher Occupation*. (Page 43-80). Bangkok: Faculty of Education, Chulalongkorn University.
- Rawang,W. (2008). *Code Switching Process Based Communicative Thai-English Model*. Department of Education, Faculty of Social Sciences and Humanities. Mahidol University.
- Sananworakiat, R. (2010). "Educational Environment and Environmental Solution". *AEE-T Journal of Environmental Education*, 1(1), 44-46.
- Sasin Graduate Institute of Business Administration, Chulalongkorn University, organized by Social Research Institute, Chulalongkorn University, and Department of Environmental Quality Promotion, Ministry of Natural Resources and Environments, Bangkok: Chulalongkorn University.
- UNESCO. (1976). The Belgrade Charter. *Connect 1*, 1 (January),2.
- Verravatannond, V. (1997). *Environmental Crisis: Deadlock of Development*. (2<sup>nd</sup> Edition). Bangkok: Songsiam Company Limited
- Waiwanichchakul, N and Udomsri, C. (1990). *Business Research Methodology*. (3<sup>rd</sup> Edition). Bangkok: Chulalongkorn University.
- Wankaew, S. (n.d.). Workshop Conference for Consideration of "Draft" on Educational Environment Plan for Sustainable Development (B.E. 2551-2555) on 24 January 2008 at Conference Room of Sasin Hall, Floor 9,
- White, Alvin M. (1981). *Interdisciplinary Teaching*. San Francisco: Jossey-Bass.
- Yamane, T. (1967). *Elementary Sampling Theory*. Englewood Cliffs, NJ: Prentice Hall.